IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS:	James B. Terry and Thomas P. Wilson	§ § §	GROUP ART UNIT: Not Yet Assigned
SERIAL NO.:	Not Yet Assigned	§ §	EXAMINER: Not Yet Assigned
FILED:	Concurrently Herewith	§ §	
FOR:	Well System	§	

PRELIMINARY AMENDMENT

Atty. Dkt. No.: 1391-10210
Date: July 18, 2001

Commissioner for Patents
Washington, D. C. 20231

Sir:

Please enter the following amendments before calculating the filing fee for this application:

In the Specification

Please amend the specification by deleting the referenced paragraph and replacing it with the corresponding amended paragraph below. A copy of the amended paragraph with deletions bracketed and additions underlined is appended hereto.

Delete the paragraph on page 1 under the heading "CROSS-REFERENCE TO RELATED APPLICATIONS:" and replace it with the following:

This is a continuation application of U.S. Patent Application Serial No. 09/081,961, filed May 20, 1998 and entitled "Well System," which claims the benefit of 35 U.S.C. 119(e) of U.S. Provisional Application Serial No. 60/063,326, filed October 27, 1999 and entitled "Drilling System", both hereby incorporated herein by reference.

In the Claims:

Please cancel claims 4-6, 8, 9, 14, and 16.

Please add new claims 38-63.

Please amend claims 1-3, 7, 10-15, 17, 18, 21, 22, 24, 25, and 33-35, by replacement with rewritten claims 1-3, 7, 10-15, 17, 18, 21, 22, 24, 25, and 33-35,13 as follows. A marked up version of the amended claims, showing the changes by underlining of the added text and bracketing of the deleted text, is appended hereto.

1. (Amended) A system for conveying a well apparatus in a well, comprising:

a composite tube having a liner with a flow bore to circulate fluids and fibers wrapped in a predetermined pattern around said liner to carry axial load;

a conductor disposed in the fibers; and

a propulsion system attached downhole to said composite tube.

2. (Amended) The system of claim 1 wherein said fluids around said composite tube cause said composite tube to achieve substantially neutral buoyancy within the well.

3. (Amended) The system of claim 1 wherein said composite tube includes an axial component of the modulus of elasticity having Young's modulus in the range of 500,000 to 10,500,000 psi.

7. (Amended) The system of claim 1 wherein said composite tube has a material with a density in the range of from 0.99 grams per cubic centimeter to 2.9 grams per cubic centimeter achieving substantially neutral buoyancy in said fluids.

10. (Amended) The system of claim 1 wherein said composite tube is made of a fiber reinforced matrix.

11. (Amended) The system of claim 1 wherein said conductor is embedded non-axially in said composite tube.

12. (Amended) The system of claim 1 further including a data transmission conductor housed adjacent said fibers of said composite tube.

13. (Amended) The system of claim 1 further including passages for conveying fluid pressure and conductors for conducting electricity and data, said passages and conductors being disposed adjacent said fibers.

15. (Amended) The system of claim 1 wherein said propulsion system includes an aperture therethrough extending around an axis of the propulsion system and from an upstream end to a downstream end for the flow of fluid through said propulsion system.

17. (Amended) An apparatus for performing operations downhole in a well comprising:

a string of tubular members each having a liner with a flow bore to circulate fluids with fibers wrapped in a predetermined pattern around said liner to carry axial load, said fibers forming a wall of non-metallic fibers;

a bottom hole assembly attached downhole to said string; and

a power conductor disposed adjacent said fibers in said composite tube providing power to said bottom hole assembly.

18. (Amended) The apparatus of claim 17 wherein said bottom hole assembly includes a non-drilling well apparatus.

21. (Amended) A drilling system for drilling into a formation comprising:

a string of pipe having a portion thereof which is non-metallic with fibers wrapped in a predetermined pattern about a conduit adapted for the flow of fluids;

a bottom hole assembly attached to one end of the string and having a propulsion system and a member for displacing formation;

said bottom hole assembly having a flow passage therethrough adapted for the flow of fluids and a return passageway external of said bottom hole assembly adapted for the flow of fluids containing cuttings; and

a power conductor disposed adjacent said fibers providing power to said bottom hole assembly.

22. (Amended) The system of claim 21 wherein said wrapped fibers form composite tubes and further including a connector for connecting lengths of said composite tubes.

24. (Amended) The system of claim 21 further including a power section driven by fluids and providing power to said bottom hole assembly.

25. (Amended) The system of claim 21 wherein said composite tube has load-carrying layers of fiber.

33. (Amended) A system for drilling a borehole, comprising:

a string of composite pipe extending into the borehole, said composite pipe including fibers wrapped in a predetermined pattern to carry axial load;

a prime mover coupled to said pipe string;

a drill bit at one end for drilling the borehole;

said drill bit engaged to said prime mover;

a steerable assembly connected to said prime mover; and

said prime mover pulling said composite pipe and forcing said drill bit downstream within the borehole.

34. (Amended) A bottom hole assembly for controlling the drilling of a borehole from a control at the surface, comprising:

a composite pipe extending into the borehole;

said composite pipe having a data transmission conduit coupled to the control;

a prime mover coupled to said pipe;

a drill stem attached to an orientation assembly and to a drill bit at one end for drilling the borehole;

said drill stem engaging said prime mover and said orientation assembly coupled to said data transmission conduit;

a steerable assembly connected to said prime mover and coupled to said data transmission conduit, said steerable assembly being in engagement with said drill stem;

said orientation assembly sending signals through said data transmission conduit to the control and said steerable assembly receiving signals from the control;

said steerable assembly deflecting said drill stem in more than two directions to direct said drill bit three dimensionally without rotation;

said prime mover adapted to move said drill bit upstream or downstream within the borehole in response to said signals received by said steerable assembly.

35. (Amended) A bottom hole assembly for use in drilling a borehole, comprising:

a pipe attached at one end to the bottom hole assembly and having a communication link disposed in a wall of the pipe;

a downhole motor;

a drill bit;

a propulsion system;

an articulated joint articulable three dimensionally and having a first portion connected to said downhole motor and a second portion coupled to said drill bit, said second portion connected to said first portion in a manner to permit said second portion to be bent three dimensionally from a coaxial orientation from said first portion; and

a steerable assembly in engagement with said second portion, said steerable assembly being in communication with said communication link to bend said second portion three dimensionally with respect to said first portion upon command to change the direction of said drill bit.

38. (New) A system for conveying a well apparatus in a well, comprising:

a string of composite tubes with one or more conductors disposed in a wall thereof and a flow bore to circulate fluids downhole in the well;

a propulsion system attached downhole to said string; said propulsion system being powered by the circulation fluids circulated through said flow bore and up an annulus formed by the composite tubes;

said composite tubes being engineered to cause said composite tubes to withstand axial and yield stress placed on said string.

39. (New) The system of claim 38 further including a power section providing power to a drill member utilizing the circulation fluids.

40. (New) The system of claim 39 wherein said propulsion system and power section are powered by the circulation fluids supplied through said string.

41. (New) The system of claim 38 wherein said composite tubes have a material with a density in the range of from 0.99 grams per cubic centimeter to 2.9 grams per cubic centimeter.

42. (New) The system of claim 38 wherein said composite tubes are made of a fiber reinforced matrix.

43. (New) The system of claim 38 further including a connector for connecting lengths of said composite tubes.

44. (New) The system of claim 38 further including a three dimensional steering apparatus.

45. (New) The system of claim 38 further including a drill member and a steerable assembly controlling the direction of said drill member.

46. (New) The system of claim 38 further including:

a drill bit connected to a downhole motor by an articulated joint, said articulated joint having a first portion connected to said downhole motor and a second portion coupled to said drill bit, said second portion connected to said first portion in a manner to permit said second portion to be bent from a coaxial orientation from said first portion; and

a steerable assembly in engagement with said second portion, said steerable assembly being in communication with said communication link to bend said second portion with respect to said first portion upon command to change the direction and/or angle of inclination of said drill bit.

47. (New) The system of claim 35 wherein said steerable assembly includes at least one electrically actuated motor to cause said second portion to move three dimensionally.

48. (New) The system of claim 1 wherein said composite tube includes load carrying layers of fibers and a wear layer disposed around said load carrying layers.

49. (New) The system of claim 48 wherein said wear layer is braided around said load carrying layers.

50. (New) The system of claim 48 further including a pressure layer around said load carrying layers.

51. (New) The system of claim 1 wherein said propulsion system is powered by the fluids circulated through said flow bore and up an annulus formed by the composite tube.

52. (New) The system of claim 1 wherein said propulsion system includes a housing with traction modules for alternating engaging the borehole to propel a bit for drilling a borehole in the well.

53. (New) The apparatus of claim 17 wherein said bottom hole assembly includes an electronics section and a propulsion system including a resistivity antenna, said resistivity antenna being connected to said electronics section for measuring the resistivity of the well.

54. (New) The apparatus of claim 17 wherein said string of tubular members is engineered from a materials to cause said string to achieve substantially neutral buoyancy in the fluids in the well.

55. (New) The apparatus of claim 19 wherein said propulsion system is powered by circulation fluids passing through said string and bottom hole assembly.

56. (New) The apparatus of claim 20 wherein said three dimensional steering apparatus includes a three dimensionally, angularly adjustable joint at said three dimensional steering apparatus.

57. (New) The drilling system of claim 21 wherein said bottom hole assembly has an axis with a central flow passage therethrough disposed about said axis.

58. (New) The apparatus of claim 21 wherein said propulsion system includes a housing with an aperture receiving said resistivity antenna.

59. (New) The drilling system of claim 22 wherein said connector includes:

a first end connector mounted on one composite tube;

a second end connector mounted on a second composite tube;

said end connectors having mating cooperative surfaces which engage upon mating said end connectors.

60. (New) The drill system of claim 22 further including:

first and second lengths of a composite tube, each length including an inner liner, a plurality of load carrying layers around said liner, at least one power conductor and at least one data transmission conductor extending said length between said load carrying layers;

first and second end connectors for disposition on said first and second lengths respectively, said end connectors having apertures for receiving one end of said liners, load carrying layers, power conductor and data transmission conductor;

said end connectors having conductor connectors for connecting said power conductors and said data transmission conductors; and

said end connectors having interengageable members connecting said end connectors

61. (New) The system of claim 23 wherein said steerable assembly is actuated electrically.

62. (New) The apparatus of claim 23 wherein said steerable assembly includes a housing, a plurality of spacer members disposed in apertures azimuthally spaced around said housing, and a

plurality of actuators mounted in said housing for individually actuating said spacer members into engagement with the borehole at different radial extents.

63. (New) The apparatus of claim 29 wherein said housing includes two housing sections having a flex joint therebetween and an output shaft extending through said housing with an articulated joint at said flex joint.

REMARKS

The above amendments have been made voluntarily for the purpose of broadening the claims and not for the purpose of patentability. Therefore these amendments do not invoke *Festo Corp. v. Shodetsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3rd 558 (Fed. Cir. 2000) so as to prevent the application of the doctrine of equivalents.

The Examiner is respectfully requested to enter into the record the above amendments prior to calculating the filing fee for this continuation application.

Respectfully submitted,

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MARKED-UP VERSIONS OF AMENDMENTS

In the Specification:

The paragraph on page 1 under the heading "CROSS-REFERENCE TO RELATED APPLICATIONS"

[The present application claims the benefit of 35 U.S.C. 119(b) provisional application Serial No. 60/063,326, filed October 27, 1999 and entitled "Drilling System", incorporated herein by reference.] This is a continuation application of U.S. Patent Application Serial No. 09/081,961, filed May 20, 1998 and entitled "Well System," which claims the benefit of 35 U.S.C. 119(e) of U.S. Provisional Application Serial No. 60/063,326, filed October 27, 1999 and entitled "Drilling System", both hereby incorporated herein by reference.

In the Claims:

1. (Amended) A system for conveying a well apparatus in a well, comprising:

a composite [umbilical] tube having a liner with a flow bore to circulate fluids and fibers wrapped in a predetermined pattern around said liner to carry axial load;

a conductor disposed in the fibers; and

a propulsion system attached downhole to said composite tube [umbilical].

2. (Amended) The system of claim 1 [further including a fluid] wherein said fluids around said composite [umbilical causing] tube cause said composite tube [umbilical] to achieve substantially neutral buoyancy within the well.

3. (Amended) The system of claim 1 wherein said composite [umbilical includes a] tube includes [with] an axial component of the modulus of elasticity having Young's modulus in the range of 500,000 to 10,500,000 psi.

7. (Amended) The system of claim 1 wherein said composite [umbilical includes a] tube [having] has a material with a density in the range of from 0.99 grams per cubic centimeter to 2.9 grams per cubic centimeter achieving substantially neutral buoyancy in said fluids.

10. (Amended) The system of claim 1 wherein said composite tube [umbilical] is made of a fiber reinforced matrix.

11. (Amended) The system of claim 1 [further including a metallic] wherein said conductor is embedded non-axially in [a wall of] said composite tube [umbilical].

12. (Amended) The system of claim 1 further including a data transmission conductor housed [within a wall] adjacent said fibers of said composite tube [umbilical].

13. (Amended) The system of claim 1 further including passages for conveying fluid pressure and conductors for conducting electricity and data, said passages and conductors being disposed adjacent said fibers.

15. (Amended) The system of claim 1 wherein said propulsion system includes an aperture therethrough extending around an axis of the propulsion system and from an upstream end to a downstream end for the flow of fluid through said propulsion system.

17. (Amended) An apparatus for performing operations downhole in a well comprising:

a string of tubular members each having a liner with a flow bore to circulate fluids with fibers wrapped in a predetermined pattern around said liner to carry axial load, said fibers forming [having] a wall [with] of non-metallic fibers; [and]

a bottom hole assembly attached downhole to said string; and

a power conductor disposed adjacent said fibers in said composite tube providing power to said bottom hole assembly.

18. (Amended) The apparatus of claim 17 wherein said bottom hole assembly includes a non-drilling well apparatus.

21. (Amended) A drilling system for drilling into a formation comprising:

a string of pipe having a portion thereof which is non-metallic with fibers wrapped in a predetermined pattern about a conduit adapted for the flow of fluids; [and]

a bottom hole assembly attached to one end of the string and having a propulsion system and a member for displacing formation;

said bottom hole assembly having a flow passage therethrough adapted for the flow of fluids and a return passageway external of said bottom hole assembly adapted for the flow of fluids containing cuttings; and

a power conductor disposed adjacent said fibers providing power to said bottom hole assembly.

22. (Amended) The system of claim 21 wherein said wrapped fibers form composite tubes and further including a connector for connecting lengths of said [pipe] composite tubes.

24. (Amended) The system of claim 21 further including a power section driven by fluids and providing power to said bottom hole assembly.

25. (Amended) The system of claim 21 wherein said [pipe is a] composite [pipe] tube has load-carrying layers of fiber.

33. (Amended) A system for drilling a borehole, comprising:

a string of composite pipe extending into the borehole, said composite pipe including fibers wrapped in a predetermined pattern to carry axial load;

a prime mover coupled to said pipe string;

a drill bit at one end for drilling the borehole;

said drill bit engaged to said prime mover;

a steerable assembly connected to said prime mover; and

said prime mover [adapted to move] pulling said composite pipe and forcing said drill bit [upstream or] downstream within the borehole [in response to said steerable assembly].

34. (Amended) A bottom hole assembly for controlling the drilling of a borehole from a control at the surface, comprising:

a composite pipe extending into the borehole;

said composite pipe [string] having a data transmission conduit coupled to the control;

a prime mover coupled to said pipe;

a drill stem attached to an orientation assembly and to a drill bit at one end for drilling the borehole;

said drill stem engaging said prime mover and said orientation assembly coupled to said data transmission conduit;

a steerable assembly connected to said prime mover and coupled to said data transmission conduit, said steerable assembly being in engagement with said drill stem;

said orientation assembly sending signals through said data transmission conduit to the control and said steerable assembly receiving signals from the control; [and]

said steerable assembly deflecting said drill stem in more than two directions to direct said drill bit three dimensionally without rotation;

said prime mover adapted to move said drill bit upstream or downstream within the borehole in response to said signals received by said steerable assembly.

35. (Amended) A bottom hole assembly for use in drilling a borehole, comprising:

a pipe attached at one end to the bottom hole assembly and having a communication link disposed in [extending through] a wall of the pipe;

a downhole motor;

a drill bit;

a propulsion system [thruster];

an articulated joint articulable three dimensionally [disposed in said thruster] and having a first portion connected to said downhole motor and a second portion coupled to said drill bit, said second portion connected to said first portion in a manner to permit said second portion to be bent three dimensionally from a coaxial orientation from said first portion; and

a steerable assembly in engagement with said second portion, said steerable assembly being in communication with said communication link to bend said second portion three dimensionally with respect to said first portion upon command to change the direction of said drill bit.